

**CITY OF NEWTON  
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2012

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## Report Summary:

### Highlights

### January 1, 2011

### January 1, 2012

#### Contributions

Funding Schedule FY 2013	\$16,343,094	\$16,343,094
Funding Schedule FY 2014	16,892,678	18,363,516

#### Funded Ratios

GAS No. 25	55.0%	53.1%
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#### Participants

Actives	1,669	1,610
Retirees and Beneficiaries	1,156	1,164
Inactives	574	561
Disabled	<u>156</u>	<u>155</u>
Total	3,555	3,490

#### Payroll

Payroll of Active Members	\$81,378,076	\$80,337,091
Average Payroll	48,759	49,899

#### Normal Cost

Employer	2,808,571	3,208,303
Employee	<u>6,817,450</u>	<u>6,821,163</u>
Total	9,626,021	10,029,466

#### Actuarial Accrued Liabilities

Actives	194,942,250	196,092,515
Retirees, Beneficiaries, Disabilities and Inactives	<u>278,141,563</u>	<u>297,131,645</u>
Total	473,083,813	493,224,160

#### Actuarial Value of Assets

<u>260,156,459</u>	<u>262,109,152</u>
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#### Unfunded Actuarial Accrued Liabilities

\$212,927,354	\$231,115,008
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## **Introduction**

This report presents the findings of an actuarial valuation as of January 1, 2012, of the Newton Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2012.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of Newton Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2012.

The valuation and forecast do not account for:

- Any subsequent changes in the law. In particular, benefit changes approved under Chapter 176 of the Acts of 2011 impact only members hired on or after April 2, 2012 and are therefore not reflected in this valuation. Subsequent valuations will be impacted to the extent the City has employees hired on or after the effective date.
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

### **Actuarial Experience**

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the last year, the total unfunded actuarial accrued liability increased by 8.5% to \$231,115,008. The increase was larger than expected as a result of net unfavorable actuarial experience during the preceding year, primarily less than expected growth in the actuarial value of assets. In addition, to comply with a recent update within Actuarial Standard of Practice No. 35 (ASOP 35), the pre-retirement and post retirement mortality were updated to the RP-2000 Mortality Table projected 22 years with Scale AA for males and females. This change increased the unfunded liability by \$9,585,727. The sources of the (gain)/loss are as follows:

Investment	9,588,647
Salary Increases	(2,787,161)
New Participants and Rehires	1,244,605
Active - Retirements	(1,041,043)
Active - Terminations	898,226
Active - Mortality	(107,898)
Active - Disabilities	(49,912)
Inactive - Mortality and data adjustments	1,956,167
Contribution Gain	(741,266)
Mortality update	9,585,727
Other	(3,982,814)
Total (gain)/loss	14,563,278

Also, for those hired after January 1, 2011, the salary taken into account for benefit purposes was capped at 64% of the IRC Section 401(a)(17) limit (indexed).

## Actuarial Costs and Liabilities:

### Normal Costs

An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. The normal cost is the sum of the individual normal costs determined for each member. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

**Table I**

	<u>January 1, 2011</u>	<u>January 1, 2012</u>
Superannuation	\$6,415,808	\$6,552,100
Termination	1,427,148	1,428,088
Death	384,503	350,498
Disability	1,398,562	1,698,780
 Total Normal Cost	 9,626,021	 10,029,466
% of Pay	11.8%	12.5%
 Employee Contributions	 6,817,450	 6,821,163
% of Pay	8.4%	8.5%
 Employer Normal Cost	 \$2,808,571	 \$3,208,303
% of Pay	3.5%	4.0%

**Present Value of Actuarial Accrued Liabilities**

The actuarial accrued liabilities (AAL) represent the value of all benefits as of January 1, 2012, based on the past service of the actives and inactive. The AAL can be compared to the assets to determine the funded status of the Plan. The present value of these earned benefits is shown in Table II below.

**Table II**

	<u>January 1, 2011</u>	<u>January 1, 2012</u>
Actives		
Superannuations	\$183,635,970	\$187,082,622
Termination	(3,125,789)	(3,252,613)
Death	3,945,883	3,449,414
Disability	<u>10,486,186</u>	<u>8,813,092</u>
Subtotal	194,942,250	196,092,515
Retirees and Inactives		
Retirees and Beneficiaries	220,936,112	238,411,842
Terminated (Refund)	4,541,588	4,748,232
Disabled	<u>52,663,863</u>	<u>53,971,571</u>
Subtotal	<u>278,141,563</u>	<u>297,131,645</u>
Total	\$473,083,813	\$493,224,160

### **Present Value of Future Benefits**

The present value of future benefits represents the value of all benefits as of January 1, 2012, earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The present value of the total expected benefits is shown in Table III.

**Table III**

	<u>January 1, 2011</u>	<u>January 1, 2012</u>
Actives		
Superannuation	\$233,830,949	\$237,829,495
Termination	8,273,357	8,015,305
Death	6,947,879	6,178,520
Disability	<u>23,121,667</u>	<u>23,983,438</u>
Subtotal	272,173,852	276,006,758
Retirees and Inactives		
Retirees and Beneficiaries	220,936,112	238,411,842
Terminated (Refund)	4,541,588	4,748,232
Disabled	<u>52,663,863</u>	<u>53,971,571</u>
Subtotal	<u>278,141,563</u>	<u>297,131,645</u>
Total	\$550,315,415	\$573,138,403



## Funded Status and Appropriations:

### Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

**Table IV**

	<u>January 1, 2011</u>	<u>January 1, 2012</u>
Cash equivalents	\$5,899,140	\$6,723,788
Real Estate	10,547,663	10,274,070
PRIT Core Fund	224,928,149	215,818,018
Accounts receivable	260,782	536,859
Accounts payable	(7,603)	(9,522)
Accrued income	<u>0</u>	<u>0</u>
Total Market Value	\$241,628,132	\$233,343,214
Total Actuarial Value	\$260,156,459	\$262,109,152

**Actuarial Value of Assets**

For actuarial purposes, the assets are valued using a method which reflects the market value of assets through gradual recognition of any unrealized appreciation or depreciation in assets beyond the 7.75% return. The following table shows the development of valuation assets:

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(1) Assets for valuation purposes, January 1, 2011	\$260,156,459
(2) Cash flow during year without regard to investment income and investment expenses	
(a) Benefit payouts and refunds	(\$32,862,630)
(b) City contributions	\$16,075,989
(c) Member contributions	\$7,730,262
(d) Net transfers and reimbursements	<u>\$757,186</u>
(e) Net cash flow	(\$8,299,193)
(3) Expected investment income and expenses	\$19,840,532
(4) Preliminary Asset Value (1 + 2e + 3)	\$271,697,798
 (5) Market value, December 31, 2011	 \$233,343,214
(6) Preliminary asset value	<u>\$271,697,798</u>
(7) Unrecognized appreciation (5 - 6)	(\$38,354,584)
(8) Adjustment (7 x 25%)	(\$9,588,646)
 (9) Adjusted asset value (4 + 8)	 \$262,109,152
(10) Assets for valuation purposes, January 1, 2012 (adjusted asset value limited to 120% of market value of assets)	\$262,109,152
 (11) Ratio of actuarial value to market value	 112.3%
 (12) The actuarial rate of return for year ending December 31, 2011 (based on the adjusted asset value)	 4.00%
 (13) The market value rate of return for year ending December 31, 2011	 0.01%

## **Unfunded Actuarial Accrued Liabilities**

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

**Table VI**

	<u>January 1, 2011</u>	<u>January 1, 2012</u>
Actuarial Accrued Liability	\$473,083,813	\$493,224,160
Actuarial Assets	<u>260,156,459</u>	<u>262,109,152</u>
Unfunded Actuarial Accrued Liability	\$212,927,354	\$231,115,008
Funded Status	55.0%	53.1%

## **Appropriations**

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2040, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2038  
\$ 231,115,008 over 26 years with 3.75% increasing payments
- Interest adjusted for payments deposited annually each August 1.

The pension appropriation is shown in Table VII.

**Table VII**

	<u>January 1, 2011</u>	<u>January 1, 2012</u>
Normal cost	\$2,808,571	\$3,208,303
Amortization payment of the prior accrued liability	<u>12,352,532</u>	<u>13,704,984</u>
Total cost	\$15,161,103	\$16,913,287
% of Pay	18.6%	21.1%
Fiscal 2013 cost	\$16,343,094	\$16,343,094
Fiscal 2014 cost	\$16,892,678	\$18,363,516

### **Appropriation Forecast**

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2036 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost is expected to increase during the next 26 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total FYE13 cost represents 20.3% of payroll, decreasing to 17.0% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 2.1% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

Benefit changes approved under Chapter 176 of the Acts of 2011 impact only members hired on or after April 2, 2012 and are therefore not reflected in this valuation. Subsequent valuations will be impacted to the extent the City has employees hired on or after the effective date.

**Appropriation Forecast**

<u>Fiscal</u> <u>Year</u> <u>Ending</u>	<u>Payroll*</u>	<u>Employee</u> <u>Contribution</u>	<u>Employer</u> <u>Normal Cost</u> <u>with Interest</u>	<u>Amortization</u> <u>Payments</u> <u>with Interest</u>	<u>Employer</u> <u>Total Cost</u> <u>with Interest</u>	<u>Employer</u> <u>Total Cost</u> <u>% of Payroll</u>	<u>Funded</u> <u>Ratio %**</u>
2013	\$80,337,091	\$6,821,163	\$3,351,085	\$12,992,009	\$16,343,094	20.3	52.9
2014	\$83,952,260	\$7,201,458	\$3,425,278	\$14,938,238	\$18,363,516	21.9	53.4
2015	\$87,730,112	\$7,602,166	\$3,499,362	\$15,498,423	\$18,997,785	21.7	54.0
2016	\$91,677,967	\$8,024,355	\$3,573,177	\$16,079,613	\$19,652,790	21.4	54.7
2017	\$95,803,475	\$8,469,147	\$3,646,549	\$16,682,599	\$20,329,148	21.2	55.3
2018	\$100,114,632	\$8,937,720	\$3,719,290	\$17,308,196	\$21,027,486	21.0	56.1
2019	\$104,619,790	\$9,431,315	\$3,791,192	\$17,957,254	\$21,748,446	20.8	56.9
2020	\$109,327,681	\$9,951,235	\$3,862,035	\$18,630,651	\$22,492,686	20.6	57.8
2021	\$114,247,426	\$10,498,850	\$3,931,576	\$19,329,300	\$23,260,876	20.4	58.8
2022	\$119,388,561	\$11,075,598	\$3,999,555	\$20,054,149	\$24,053,704	20.1	59.9
2023	\$124,761,046	\$11,682,993	\$4,065,691	\$20,806,179	\$24,871,870	19.9	61.2
2024	\$130,375,293	\$12,322,626	\$4,129,679	\$21,586,411	\$25,716,090	19.7	62.6
2025	\$136,242,181	\$12,996,168	\$4,191,194	\$22,395,902	\$26,587,096	19.5	64.1
2026	\$142,373,079	\$13,705,376	\$4,249,883	\$23,235,748	\$27,485,631	19.3	65.9
2027	\$148,779,868	\$14,452,094	\$4,305,366	\$24,107,088	\$28,412,454	19.1	67.8
2028	\$155,474,962	\$15,238,264	\$4,357,237	\$25,011,104	\$29,368,341	18.9	69.8
2029	\$162,471,335	\$16,065,924	\$4,405,058	\$25,949,021	\$30,354,079	18.7	72.0
2030	\$169,782,545	\$16,937,216	\$4,448,359	\$26,922,109	\$31,370,468	18.5	74.4
2031	\$177,422,760	\$17,854,391	\$4,486,637	\$27,931,688	\$32,418,325	18.3	76.9
2032	\$185,406,784	\$18,819,813	\$4,519,353	\$28,979,126	\$33,498,479	18.1	79.5
2033	\$193,750,089	\$19,835,968	\$4,545,927	\$30,065,844	\$34,611,771	17.9	82.2
2034	\$202,468,843	\$20,905,467	\$4,565,741	\$31,193,313	\$35,759,054	17.7	85.1
2035	\$211,579,941	\$22,031,054	\$4,578,133	\$32,363,062	\$36,941,195	17.5	88.0
2036	\$221,101,038	\$23,215,609	\$4,582,395	\$33,576,677	\$38,159,072	17.3	91.0
2037	\$231,050,585	\$24,260,311	\$4,788,603	\$34,835,802	\$39,624,405	17.1	94.0
2038	\$241,447,861	\$25,352,025	\$5,004,090	\$36,142,145	\$41,146,235	17.0	97.0
2039	\$252,313,015	\$26,492,867	\$5,229,274	\$0	\$5,229,274	2.1	100.0
2040	\$263,667,101	\$27,685,046	\$5,464,592	\$0	\$5,464,592	2.1	100.0
2041	\$275,532,120	\$28,930,873	\$5,710,498	\$0	\$5,710,498	2.1	100.0
2042	\$287,931,066	\$30,232,762	\$5,967,471	\$0	\$5,967,471	2.1	100.0
2043	\$300,887,964	\$31,593,236	\$6,236,007	\$0	\$6,236,007	2.1	100.0
2044	\$314,427,922	\$33,014,932	\$6,516,627	\$0	\$6,516,627	2.1	100.0

\* Calendar basis

\*\* Beginning of Fiscal Year

**GASB Statements No. 25 and No. 27**

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VIII.

**Table VIII**

	<u>January 1, 2011</u>	<u>January 1, 2012</u>
(1) Actuarial Accrued Liability	\$473,083,813	\$493,224,160
(2) Actuarial Value of Assets	<u>260,156,459</u>	<u>262,109,152</u>
(3) Unfunded Actuarial Accrued Liability	212,927,354	231,115,008
(4) Funded Ratio (2)/(1)	55.0%	53.1%
(5) Covered Payroll	\$81,378,076	\$80,337,091
(6) UAAL as a percentage of payroll: (3)/(5)	261.7%	287.7%
(7) Annual Required Contribution (ARC)	\$16,252,351	\$16,343,094
(8) Net Pension Obligation	\$0	\$0

**PERAC Annual Statement**  
**APPENDIX PAGE 3**  
**ACTUARIAL VALUATION AND ASSUMPTIONS**

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2012.

The normal cost for employees on that date was:	\$6,821,163	8.5% of pay
The normal cost for the employer was:	3,208,303	4.0% of pay
 The actuarial liability for active members was:		\$196,092,515
The actuarial liability for retired and inactive members was:		297,131,645
Total actuarial accrued liability:		493,224,160
System assets as of that date:		262,109,152
Unfunded actuarial accrued liability:		\$231,115,008

The ratio of system's assets to total actuarial liability was: 53.1%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	7.75%
Ultimate Rate of Salary Increase: for Groups 1 & 4	3.5%

**SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a percent of Covered Payroll (b-a)/c
01/01/12	\$262,109,152	\$493,224,160	\$231,115,008	53.1%	\$80,337,091	287.7%
01/01/11	260,156,459	473,083,813	212,927,354	55.0%	81,378,076	261.7%
01/01/10	254,035,335	462,103,688	208,068,353	55.0%	83,843,673	248.2%
01/01/09	252,116,922	443,009,607	190,892,685	56.9%	82,013,624	232.8%
01/01/08	281,114,591	419,000,697	137,886,106	67.1%	79,205,738	174.1%
01/01/07	265,700,539	402,257,645	136,557,106	66.1%	74,197,265	184.0%
01/01/06	253,420,995	382,732,277	129,311,282	66.2%	71,278,135	181.4%
01/01/05	244,266,000	361,080,000	116,814,000	67.6%	69,702,000	168.0%
01/01/04	233,888,000	350,688,000	116,800,000	66.7%	68,327,000	171.0%
01/01/03	227,126,000	338,172,000	111,046,000	67.2%	64,636,000	172.0%
01/01/02	228,239,000	306,123,000	77,884,000	74.6%	61,438,000	127.0%

Attach Copy of Current Approved Funding Schedule



## **EXHIBITS**

## Age/Service Distribution with Salary as of January 1, 2012

Attained Age	Average Salary									
	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
20-24	83	2	0	0	0	0	0	0	0	85
	24,962	48,670	0	0	0	0	0	0	0	25,520
25-29	188	23	0	0	0	0	0	0	0	211
	35,193	47,160	0	0	0	0	0	0	0	36,497
30-34	83	77	17	0	0	0	0	0	0	177
	38,020	51,848	58,379	0	0	0	0	0	0	45,991
35-39	27	45	43	3	0	0	0	0	0	118
	40,944	57,687	61,605	77,036	0	0	0	0	0	55,776
40-44	40	33	41	19	5	0	0	0	0	138
	36,736	55,263	64,507	65,880	57,147	0	0	0	0	54,169
45-49	34	37	33	24	34	14	1	0	0	177
	40,078	47,467	53,982	69,469	63,231	68,781	64,314	0	0	55,055
50-54	49	35	35	17	24	47	13	0	0	220
	42,691	41,629	50,252	61,525	60,713	67,126	63,516	0	0	53,597
55-59	23	52	37	16	25	38	32	12	3	238
	43,956	43,902	51,433	63,607	59,470	66,845	79,867	66,235	51,892	57,764
60-64	14	25	30	23	24	14	16	18	8	172
	42,761	45,335	49,389	53,143	52,303	61,978	69,583	68,078	66,406	54,819
65-69	0	11	7	9	12	9	2	4	3	57
	0	55,297	51,230	42,814	47,740	36,069	49,466	42,092	55,491	47,079
70+	0	0	1	2	1	4	3	1	5	17
	0	0	46,939	42,808	38,910	44,982	53,898	92,231	53,627	51,379
Total Employees	541	340	244	113	125	126	67	35	19	1,610
Average Salary	36,013	49,505	55,806	61,123	57,972	63,732	71,936	65,166	59,028	49,899

## Retiree Distribution as of January 1, 2012

Attained Age	Number of Retirees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	1	1	0	6,618	6,618
40-44	2	0	2	20,982	0	20,982
45-49	1	2	3	20,042	13,719	33,760
50-54	3	5	8	49,375	74,031	123,406
55-59	26	18	44	881,835	196,676	1,078,511
60-64	99	54	153	3,882,788	1,115,341	4,998,130
65-69	103	95	198	4,062,810	1,882,634	5,945,444
70-74	93	99	192	3,057,107	1,652,061	4,709,169
75-79	62	90	152	1,795,288	1,616,770	3,412,058
80-84	74	87	161	1,835,081	1,233,316	3,068,397
85-89	51	107	158	1,119,922	1,368,504	2,488,426
90-94	18	54	72	325,950	634,987	960,938
95-99	1	19	20	9,270	201,787	211,057
Total	533	631	1,164	17,060,451	9,996,444	27,056,894
Average (Age/Payment)	72.9	77.3	75.3	32,008	15,842	23,245
Frequency Percent	45.8%	54.2%	100.0%	63.1%	36.9%	100.0%

## Disabled Retiree Distribution as of January 1, 2012

Attained Age	Number of Disabled Retirees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	1	0	1	46,332	0	46,332
35-39	1	0	1	36,198	0	36,198
40-44	3	0	3	134,734	0	134,734
45-49	3	0	3	108,559	0	108,559
50-54	8	5	13	354,576	131,769	486,345
55-59	14	2	16	524,624	75,452	600,076
60-64	34	5	39	1,292,223	106,073	1,398,295
65-69	25	0	25	910,564	0	910,564
70-74	18	1	19	677,445	23,602	701,047
75-79	19	4	23	526,261	90,556	616,817
80-84	9	0	9	275,500	0	275,500
85-89	2	0	2	3,183	0	3,183
90-94	1	0	1	24,248	0	24,248
95-99	0	0	0	0	0	0
Total	138	17	155	4,914,447	427,451	5,341,898
Average (Age/Payment)	66.3	63.0	66.0	35,612	25,144	34,464
Frequency Percent	89.0%	11.0%	100.0%	92.0%	8.0%	100.0%

**EXHIBIT 4 - CASHFLOW FORECAST:**

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments*	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2012	\$34,858,966	\$6,821,163	\$16,343,094	\$21,294,967	\$9,600,258
2013	36,429,072	7,201,458	18,363,516	20,711,860	9,847,761
2014	37,836,663	7,602,166	18,997,785	21,472,774	10,236,062
2015	39,309,744	8,024,355	19,652,790	22,263,618	10,631,020
2016	40,625,272	8,469,147	20,329,148	23,093,495	11,266,518
2017	41,931,900	8,937,720	21,027,486	23,975,504	12,008,810
2018	43,122,940	9,431,315	21,748,446	24,922,097	12,978,918
2019	44,245,227	9,951,235	22,492,686	25,949,269	14,147,963
2020	45,305,751	10,498,850	23,260,876	27,072,301	15,526,276
2021	46,217,066	11,075,598	24,053,704	28,310,869	17,223,105
2022	47,044,088	11,682,993	24,871,870	29,687,329	19,198,105
2023	47,672,330	12,322,626	25,716,090	31,227,741	21,594,128
2024	48,244,748	12,996,168	26,587,096	32,959,449	24,297,965
2025	48,732,825	13,705,376	27,485,631	34,907,552	27,365,734
2026	49,159,474	14,452,094	28,412,454	37,099,554	30,804,628
2027	49,525,884	15,238,264	29,368,341	39,564,344	34,645,065
2028	49,757,395	16,065,924	30,354,079	42,336,065	38,998,673
2029	50,007,091	16,937,216	31,370,468	45,448,860	43,749,452
2030	50,105,762	17,854,391	32,418,325	48,940,142	49,107,096
2031	50,039,234	18,819,813	33,498,479	52,857,692	55,136,750
2032	49,956,290	19,835,968	34,611,771	57,248,154	61,739,603
2033	49,764,959	20,905,467	35,759,054	62,159,679	69,059,240
2034	49,481,567	22,031,054	36,941,195	67,647,434	77,138,116
2035	49,166,179	23,215,609	38,159,072	73,768,230	85,976,732
2036	48,833,657	24,260,311	39,624,405	80,571,661	95,622,720
2037	48,321,102	25,352,025	41,146,235	88,134,943	106,312,100
2038	47,739,801	26,492,867	5,229,274	95,340,417	79,322,757
2039	47,148,750	27,685,046	5,464,592	101,610,234	87,611,122
2040	46,491,764	28,930,873	5,710,498	108,529,399	96,679,006
2041	48,052,197	30,232,762	5,967,471	116,071,697	104,219,734

\* Excludes account balances of \$4,748,232 for nonvested terminated members.

## EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2012, and does not take into account any subsequent changes. In particular, benefit changes approved under Chapter 176 of the Acts of 2011 impact only members hired on or after April 2, 2012 and are therefore not reflected in this valuation. Subsequent valuations will be impacted to the extent the City has employees hired on or after the effective date.

### 1. Administration

Each of the contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

### 2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

### 3. **Salary**

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

### 4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

<b><u>Date of Hire</u></b>	<b><u>Member Contribution Rate</u></b>	
	<b><u>On Salary up to \$30,000</u></b>	<b><u>On Salary in excess of \$30,000</u></b>
Prior to 1975	5.0%	5.0%
1975 to 1978	7.0%	7.0%
1979 to 1983	7.0%	9.0%
1984 to 1995	8.0%	10.0%
1996 and later	9.0%	11.0%

### 5. **Average Salary**

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.) For those hired on or after January 1, 2011, salary taken into account for benefit purposes is capped at 64% of the IRC Section 401(a)(17) limit (indexed).

### 6. **Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

## **7. Service Retirement**

### **a. Eligibility:**

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

- (i) completion of 20 years of service
- (ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service



b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

**8. Deferred Vested Retirement****a. Eligibility:**

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

**b. Benefit Amount:**

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

**c. Refund of Contributions:**

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

**9. Accidental Disability****a. Eligibility:**

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

**b. Benefit Amount:**

The accidental disability amount is 72% of annual salary plus \$729.84 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

**10. Ordinary Disability****a. Eligibility:**

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

**b. Benefit Amount:**

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

**11. Survivor Benefits****a. Occupational Death:**

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

**b. Non-Occupational Death:**

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

**12. Cost-of-Living Increases**

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

**13. Postretirement Death Benefits**

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A - Life annuity
- (ii) Option B - Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C - Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

## EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

### 1. Member Data

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

### 2. Valuation Date

January 1, 2012.

### 3. Actuarial Cost Method

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

### 4. Rate of Investment Return

It is assumed that the assets of the fund will accumulate at a compound annual rate of 7.75% per annum, net of all expenses.

### 5. Salary Scale

It is assumed that salaries including longevity will increase at of 2.0% per year in 2012, 2.5% per year in 2013, and 3.0% per year in 2014. Starting in 2015 the annual increases will be 3.5% per year.

### 6. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$12,000 per year.

**7. Value of Investments**

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). Actuarial assets equal preliminary asset value plus 25% of the difference between market value and preliminary asset value. Preliminary asset value is the previous years' actuarial asset amount increased by net cash flow and expected investment income. The result must be within 20% of market value.

**8. Annual Rate of Withdrawal Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Service</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

**9. Annual Rate of Mortality**

It is assumed that both pre-retirement and post retirement mortality are represented by the RP-2000 Mortality Table projected 22 years with Scale AA for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward three years for all disabled members. The prior report used the same base tables projected 10 years with Scale AA rather than 22.

**10. Service Retirement**

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

<b><u>Age</u></b>	<b><u>Male General Employees</u></b>	<b><u>Female General Employees</u></b>	<b><u>Male and Female Police and Fire Employees</u></b>
45	0.0000	0.0000	0.01000
46	0.0000	0.0000	0.01000
47	0.0000	0.0000	0.01000
48	0.0000	0.0000	0.01000
49	0.0000	0.0000	0.01000
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

**11. Annual Rate of Disability Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

<b><u>Attained Age</u></b>	<b><u>General Employees</u></b>	<b><u>Police and Fire Employees</u></b>
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 40% of all disabilities are ordinary (60% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

**12. Family Composition**

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

**13. Administrative Expenses**

No provision is made for anticipated administrative expenses.



## EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

### 1. **Actuarial Accrued Liability**

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

### 2. **Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

### 3. **Actuarial Cost Method**

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

### 4. **Actuarial Present Value**

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

### 5. **Forecast**

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

**6. Normal Cost**

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

**7. Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

**8. Valuation Method**

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

**9. Vested Liability**

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

**CERTIFICATION:**

This report fairly represents the actuarial position of the City of Newton Retirement System contributing as of January 1, 2012, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

Buck Consultants, LLC



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Philip Bonanno, FSA, EA, MAAA, FCA  
Director, Consulting Actuary  
Enrolled Actuary No. 11-06215



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Marcus Cleary, FSA, EA, MAAA  
Senior Consultant  
Enrolled Actuary No. 11-07662

August 1, 2012

## **BREAKOUTS**

## Breakouts

Code	Department	Active Participants	Payroll	Normal Cost	Amortization of Unfunded Liability	FYE 2014 Appropriation
001	M.I.S.	7	\$ 571,328	\$ 8,180	\$ 76,551	\$ 84,731
002	Personnel	6	415,234	4,228	101,205	105,433
003	Human Services	7	477,046	20,279	81,558	101,837
005	Jackson Homestead	3	149,324	(4,969)	17,890	12,921
006	Executive	6	419,853	9,088	81,105	90,193
007	Comptroller	5	370,526	18,687	103,730	122,417
008	Retirement	2	180,389	(976)	28,724	27,748
009	Assessing	12	926,791	22,988	168,926	191,914
010	Purchasing	5	279,901	15,354	62,395	77,749
011	Treasury	11	590,935	23,247	82,130	105,377
012	Law	11	887,630	20,319	148,255	168,574
013	City Clerk	6	327,172	9,886	29,524	39,410
014	Clerk of the Board	4	244,314	7,030	51,526	58,556
015	Board of Aldermen (Group 1)	19	185,250	16,862	26,664	43,526
016	Building (Group 1)	20	1,200,866	37,251	276,836	314,087
016	Building (Group 2 & 4)	4	223,358	23,465	19,088	42,553
017	Elections	5	249,595	2,995	92,215	95,210
018	Planning	11	666,685	12,706	94,769	107,475
018F	Community Development	9	544,096	13,207	112,757	125,964
018P	Community Preservation	1	80,734	6,409	1,833	8,242
019	Fire (Group 2 & 4)	178	11,898,871	932,467	3,317,074	4,249,541
019A	Fire - Civilian Personnel	5	288,232	4,725	60,163	64,888
19S	Fire (Retired under "Starck" Bill)	0	-	-	189,699	189,699
020	Police (Group 2 & 4)	136	10,287,402	744,728	3,001,144	3,745,872
022	Sealer/Weights & Measures	1	66,782	3,475	4,533	8,008

## Breakouts

Code	Department	Participants	Payroll	Normal Cost	Amortization of Unfunded Liability	FYE 2014 Appropriation
020A	Police - Civilian Personnel (Group 1)	35	\$ 1,856,579	\$ 5,506	\$ 155,971	\$ 161,477
021	Police School Traffic Supervisors	14	487,186	19,244	143,113	162,357
023	Inspectional Services (Group 1)	10	667,329	21,380	123,503	144,883
023	Inspectional Services (Group 2 & 4)	2	137,682	10,691	40,214	50,905
025	Health	38	2,053,152	93,748	278,111	371,859
026	Veterans	2	140,975	4,417	42,782	47,199
027	Library	55	2,663,213	84,615	485,007	569,622
028	School Custodian	83	4,179,971	123,086	781,727	904,813
029	School Cafeteria	3	38,785	3,446	142,251	145,697
030	School Teacher Aides (Group 1)	541	16,504,706	415,521	811,802	1,227,323
031	School Clerical	111	6,634,037	269,306	1,055,623	1,324,929
031A	School Committee	0	-	-	3,345	3,345
031C	School - Community Schools	2	132,971	10,929	9,556	20,485
032	Recreation	29	1,779,485	29,243	496,905	526,148
032A	Recreation - Arts in the Parks	1	43,768	4,253	-	4,253
033	Engineering	13	1,002,509	32,757	196,345	229,102
034	Public Works	105	5,634,525	226,422	1,255,206	1,481,628
034A	Storm Water Management	6	318,201	5,424	36,335	41,759
034B	Man Highway Crew	5	214,408	20,482	3,406	23,888
035	Water/Sewer	12	670,368	18,069	105,049	123,118
035S	Sewer Personnel (Group 1)	21	1,081,292	20,865	187,613	208,478
035W	Water Personnel	29	1,426,097	33,032	194,239	227,271
036	Newton Housing Authority	19	1,137,538	21,211	159,841	181,052
<b>TOTAL</b>		1610	\$ 80,337,091	\$ 3,425,278	\$ 14,938,238	\$ 18,363,516